Syndesmosis Injury
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Introduction
• Family Practice Sports Medicine
• UAMS Fellowship
• Directed by Dr. Ramon Ylanan

Purpose
• Identify the anatomical structures that comprise the ankle syndesmosis.
• Recognize the most common mechanism related to syndesmosis injury.
• List specialized tests used in physical exam to screen for and confirm syndesmosis injury.
Outline

- Sprain vs Sprain
- Anatomy
- MOI
- Evaluation
- Treatment

Where is the upper ankle?

- Joint proximal to the ankle is the knee, right?
- Low vs High
  - Two distinct injuries
  - Recovery time
  - Long term consequence of arthritis and instability

Epidemiology

- General Athletic Population
  - 10%-20% of all ankle sprains are HAS
- Specific sports are more prone to HAS
  - Contact (FOOTBALL, rugby, wrestling, lacrosse)
  - Immobilized (Skiing, hockey)
Recovery Time

• Lateral Ankle Sprain
  — Improvement in function after 2 weeks.

• Syndesmotic Sprain
  — Varying reports of recovery time
  • 2.5 weeks in NFL
  • 3 weeks in NCAA FB
  • 8 weeks in West Point Cadet

Sequela

• Without fracture or diastasis:
  — Ankle Pain
  — Ankle Stiffness
  — Recurrent Ankle Sprain
  — Heterotopic Ossification
  — Persistent Disability
  — Prolonged Recovery

Anatomy

• Bones
• Ligaments
• Motion
Bones

• Tibia
• Fibula

Bones

• Talus

Ankle “Mortice”
Articular Surface of Talus

Superior View of the Talus

Ligaments

• Lateral Complex
• Medial Complex
• Syndesmosis
**Lateral Complex**
- ATFL
- PTFL
- CFL

**Medial Complex**
- Deltoid

** Syndesmosis**
- *Inferior Anterior* TibioFibular Ligament
- *Inferior Posterior* TibioFibular Ligament
- Interosseous TibioFibular Ligament
- Interosseous Membrane
Anterior TIBFIB

Posterior TIBFIB

Interosseous Structures
Motions in 3 Planes

- Sagittal
  - Dorsiflexion and Plantarflexion
- Coronal
  - Inversion and Eversion
- Axial
  - Internal and External Rotation

Injury

- Lateral ankle sprain
  - Inversion injury
    - Planes of motion
      - Coronal / Sagittal (plantarflexion)
    - Lateral Complex Compromised
- High Ankle (Syndesmosis)

Syndesmosis

- Forced External Rotation (Axial)
- Complicated by Dorsiflexion (Sagittal)
  - Talus widens anteriorly
    - Tighter fit in mortice
      - Less room to accommodate axial rotation
- Complicated by Eversion (Coronal)
  - Talus acts as wedge to force open ankle mortice
Forced External Rotation

Forced Eversion

Associated injuries
- Lateral Malleolus (fibula fracture)
- Bimal Fracture
- Massonneuve (proximal fibula fracture)
- Deltoid Ligament Tear
  – Forced Eversion
Grade of Injury

- Grade I
  - Stretching of ATibFib

- Grade II
  - Partial Tear of ATibFib

- Grade III
  - Complete Tear of ATibFib

Evaluation

- History and MOI is KEY
- Acute
  - Shoe off
    - Deformity
    - Neurovasular Check
    - TTP?
  - Bear weight
    - Stand on Toes?
    - Single Leg Heel Raise?
  - Full ROM and Strength can return to play.

Evaluation

- Subacute (Physicians office)
  - Symptoms
    - Pain out of proportion
    - Pain over anterior ankle
  - Physical Exam Tests
    - Combine multiple tests
Palpation over ATibFib Ligament

Dorsiflexion

Dorsiflexion With External Rotation
Which Tests to do?

- Not one perfect test
- Combine Sensitivity and Specificity
  - DFER and Palpation are highly sensitive
  - Squeeze and Crossed Leg are highly specific
Advanced Imaging

• CT
  – If no Fx, then doesn’t add much

• MRI
  – Approaches 99% in Sens and Spec

• US
  – Ninja level skill

Treatment

• Timing
  – Acute
    • Clinical judgement of severity
      – ER, close follow up, splint and crutches.
  – Subacute (PCP office)
    • Evaluation and Imaging
      – NWB
        – Brace in neutral or plantarflexion.
  – Definitive
    • Surgical
    • Therapy

• RICE

Physical Therapy

• Severity
  – PROM
  – AROM
  – Strengthening
    • Avoiding dorsiflexion entirely initially
    • Balance and stability exercises
Bracing and Taping

• Tape by ATC
• Brace

Injection Therapy

• US guided injection
  — AITFL (small space)

• CSI vs PRP
  — Study by NFL and NCAA
    • Return approximately 10 days earlier.

Surgery


Conclusion

• Syndesmosis or High Ankle Sprain
• Injury mechanism and structures
• Evaluation
• Treatment Options
• Questions?